PATENT CLAIMS

1. A method for operation of a radar sensor in the near area for production of a detectable coverage field (5) for the identification of people and/or stationary objects by means of an antenna,
characterized in that
the coverage field (5) can be electronically varied or adjusted.

2. A method for operation of a radar sensor in the near area for production of a detectable coverage field (5) for the identification of people and/or stationary objects by means of an antenna,
characterized in that
a presence sensor (7) is equipped with an FMCW radar for distance measurement, and/or a radar sensor (R_1 to R_4) is equipped with at least one independent auxiliary antenna (10) for carrying out a self-test.

3. The method as claimed in claim 1 or 2, characterized in that an evaluation process is carried out by evaluation of the frequency and phase of the individual reflected antenna signals.

4. The method as claimed in at least one of claims 1 to 3, characterized in that an emission angle α of the coverage field (5) is set, and in particular is finely set or is adjusted, via the phase shift of the antenna signals, in which case the sensor, in particular a radar

sensor, is arranged at right angles on any desired base, such as a wall or a door frame.

5. The method as claimed in claim 4, characterized in that the coverage field (5) is set or aligned to cover an area or as a function of position, via the emission angle α as a function of an installation height (M_H), and/or the coverage field (5) is aligned such that it is inclined downwards and, if required, is varied by fine adjustment.

6. The method as claimed in at least one of claims 1 to 5, characterized in that the radar sensor (R) is provided with a presence sensor (7).

7. The method as claimed in at least one of claims 1 to 6, characterized in that energy for a test supply is taken from the radar sensor (R_1 to R_4) and/or from the presence sensor (7) by means of an autonomous auxiliary antenna (10), and the serviceability of the radar sensor (R_1 to R_4) and/or of the presence sensor (7) is checked in this way.

8. The method as claimed in claim 7, characterized in that signals which can be evaluated and are used to evaluate the serviceability of the radar sensor (R) and/or of the presence sensor (7) are determined by drawing energy by means of the auxiliary antenna (10) or by loading the actual coverage field (5, 9) of the radar sensor (R) and/or of the presence sensor (7) at different frequencies or at the same frequencies.

9. The method as claimed in at least one of claims 1 to 8, characterized in that the direction, location and

size or area of a coverage field (9) can be influenced via a phase shift, which can be set by means of a remote control, or evaluation of the frequency and phase between the output signal and the input signal.

10. A method for operation of a radar sensor in the near area for production of a detectable coverage field (5) for the identification of people and/or stationary objects by means of an antenna,
characterized in that stationary objects can be located and determined on the basis of their size and location by means of a presence sensor (7) using an FMCW radar for distance measurement in a coverage field (9), by determination of phase shifts and delay times of the reflected signals.

11. The method as claimed in claim 10, characterized in that the size, the position and the height of the field or of the stationary object in the coverage field can be determined by determination of the delay times and by evaluation of the frequency and phase of the reflected signals.

12. The method as claimed in claim 10 or 11, characterized in that the distance to the object is measured in the stationary coverage field (9) by means of the different or changing delay times, and/or by evaluation of the frequency and phase of the reflected signals.

13. A radar sensor for production of a detectable coverage field (5, 9) for identification of people and/or

static objects in the near area by means of an antenna (3), characterized in that the antenna (3) is in the form of a plurality of end-fire antennas, in particular slot antennas (3) or patch antennas.

14. The radar sensor as claimed in claim 13, characterized in that a plurality of slot antennas (3) are arranged one above the other and/or alongside one another.

15. The radar sensor as claimed in claim 13 or 14, characterized in that the slot antennas (3) are arranged on a base surface (2).

16. The radar sensor as claimed in claim 15, characterized in that the arrangement of the slot antennas (3), comprising a plurality of slot antennas (3) which are arranged alongside one another and one above the other, are arranged on the base surface (2), and an emission angle α can be varied, can be set and/or can be adjusted over a distance A and/or B, which can be selected or can be changed in advance, between the individual slot antennas (3), if required also by phase-shifted driving of the individual antennas (3) with respect to one another.

17. The radar sensor as claimed in at least one of claims 13 to 16, characterized in that the location and a size of the coverage field (5), in particular of the dynamic field (D), can be determined and varied by means of different driving of arrangements (4) of the slot antennas (3) and/or of the individual slot antennas (3) on the base surface (2), if required as a function of an installation height (M_H).

18. The radar sensor as claimed in at least one of claims 13 to 17, characterized in that an additional presence sensor (7) in the form of a radar sensor, in particular an FMCW radar sensor, is provided in one side surface (8).

19. The radar sensor as claimed in claim 18, characterized in that the side surface (8) is at right angles or at an oblique angle to the base surface (2).

20. The radar sensor as claimed in at least one of claims 13 to 19, characterized in that at least one auxiliary antenna (10) is provided in the radar sensor (R_1 to R_4) and/or in the presence sensor (7), is loaded by drawing energy from the coverage field (5 and/or 9) of the radar sensor (R_1 to R_4) and/or of the presence sensor (7), thus allowing the serviceability of the radar sensor (R_1 to R_4) and/or of the presence sensor (7) to be tested.

21. The radar sensor as claimed in claim 19 or 20, characterized in that the auxiliary antenna (10) is in the form of an autonomous auxiliary antenna (10) and is associated with the radar sensor (R_1 to R_4) and/or with the presence sensor (7) for serviceability checking purposes, and can be operated at the same or at different frequencies.

22. The radar sensor as claimed in at least one of claims 15 to 21, characterized in that electronics are arranged in the area of a rear face, which is opposite the base surface (2).

23. The radar sensor as claimed in at least one of claims 13 to 22, characterized in that the stationary sensor is used as a presence sensor (7) in the radar sensor (R_1 to R_4), or is inserted into it.

24. The radar sensor as claimed in at least one of claims 13 to 23, characterized in that a first arrangement (6.1) composed of slot antennas (3) is formed from at least two slot antennas (3) which are arranged one above the other, and a second arrangement (6.2) of slot antennas (3) is likewise formed from at least two slot antennas (3) which are arranged one above the other, and the first arrangement (6.1) and the second arrangement (6.2) of slot antennas (3) are at a distance from one another, alongside one another.

25. The radar sensor as claimed in claim 24, characterized in that the signals of the first arrangement (6.1) of slot antennas (3) have superimposed on them the signals of the second arrangement (6.2) of slot antennas (3) in reflective wave fronts on two or more planes.

26. The radar sensor as claimed in at least one of claims 18 to 25, characterized in that electronics, the slot antennas (3) and at least one presence sensor (7) are combined in the form of a unit to form a radar sensor in a base body (1).

27. A radar sensor for production of a detectable coverage field (5, 9) for identification of people and/or static objects in the near area by means of an antenna (3), characterized in that the antenna (3) is associated

with at least one transmitter and one receiver, and the size, the position and/or the height of an object can be determined within the preselected coverage field (9) by determination of different delay times and/or phase shifts of the received signals, with the transmitter or transmitters and receiver or receivers being locally at a distance from one another.

28. The radar sensor as claimed in claim 27, characterized in that the position and illumination of a selectable coverage field (9) can be determined by means of corresponding angles and by means of any resultant phase shift between the transmitter or transmitters and the receiver or receivers.

29. The radar sensor as claimed in claim 27 or 28, characterized in that the distance to, the location of and the height of any desired stationary object in the coverage field (9) can be measured by means of at least one transmitter and one receiver.

30. The radar sensor as claimed in one of claims 27 to 29, characterized in that, if required, the limits of the length and width of the coverage field (3) can also be adjusted and set.